SEQUENCE LISTING

<110> GEORGETOWN UNIVERSITY

<120> STRUCTURE OF MATRIPTASE, A NOVEL SERINE PROTEASE AND
      ITS APPLICATION IN DIAGNOSIS, PREVENTION AND THERAPY OF
      CANCER AND OTHER CONDITIONS

<130> 082137/0280655

<140>
<141>

<150> PCT/US00/06111
<151> 2000-05-08

<150> 60/124,006
<151> 1999-03-12

<160> 39

<170> PatentIn Ver. 2.1

<210> 1
<211> 513
<212> PRT
<213> Homo sapiens

<400> 1
Met Ala Pro Ala Arg Thr Met Ala Arg Ala Arg Leu Ala Pro Ala Gly
 1   5   10   15

Ile Pro Ala Val Ala Leu Trp Leu Leu Cys Thr Leu Gly Leu Gln Gly
            20   25   30

Thr Gln Ala Gly Pro Pro Ala Pro Pro Gly Leu Pro Ala Gly Ala
            35   40   45

Asp Cys Leu Asn Ser Phe Thr Ala Gly Val Pro Gly Phe Val Leu Asp
        50   55   60

Thr Asn Ala Ser Val Ser Asn Gly Ala Thr Phe Leu Glu Ser Pro Thr
 65   70   75   80

Val Arg Arg Gly Trp Asp Cys Val Arg Ala Cys Cys Thr Thr Gln Asn
                85   90   95

Cys Asn Leu Ala Leu Val Glu Leu Gln Pro Asp Arg Gly Glu Asp Ala
            100   105   110

Ile Ala Ala Cys Phe Leu Ile Asn Cys Leu Tyr Glu Gln Asn Phe Val
            115   120   125

Cys Lys Phe Ala Pro Arg Glu Gly Phe Ile Asn Tyr Leu Thr Arg Glu
        130   135   140

Val Tyr Arg Ser Tyr Arg Gln Leu Arg Thr Gln Gly Phe Gly Gly Ser
145   150   155   160

Gly Ile Pro Lys Ala Trp Ala Gly Ile Asp Leu Lys Val Gln Pro Gln
                165   170   175

- 1 -

30428741v1

```
Glu Pro Leu Val Leu Lys Asp Val Glu Asn Thr Asp Trp Arg Leu Leu
            180               185               190

Arg Gly Asp Thr Asp Val Arg Val Glu Arg Lys Asp Pro Asn Gln Val
            195               200               205

Glu Leu Trp Gly Leu Lys Glu Gly Thr Tyr Leu Phe Gln Leu Thr Val
    210               215               220

Thr Ser Ser Asp His Pro Glu Asp Thr Ala Asn Val Thr Val Thr Val
225               230               235               240

Leu Ser Thr Lys Gln Thr Glu Asp Tyr Cys Leu Ala Ser Asn Lys Val
            245               250               255

Gly Arg Cys Arg Gly Ser Phe Pro Arg Trp Tyr Tyr Asp Pro Thr Glu
            260               265               270

Gln Ile Cys Lys Ser Phe Val Tyr Gly Gly Cys Leu Gly Asn Lys Asn
            275               280               285

Asn Tyr Leu Arg Glu Glu Glu Cys Ile Leu Ala Cys Arg Gly Val Gln
    290               295               300

Gly Pro Ser Met Glu Arg Arg His Pro Val Cys Ser Gly Thr Cys Gln
305               310               315               320

Pro Thr Gln Phe Arg Cys Ser Asn Gly Cys Cys Ile Asp Ser Phe Leu
            325               330               335

Glu Cys Asp Asp Thr Pro Asn Cys Pro Asp Ala Ser Asp Glu Ala Ala
            340               345               350

Cys Glu Lys Tyr Thr Ser Gly Phe Asp Glu Leu Gln Arg Ile His Phe
            355               360               365

Pro Ser Asp Lys Gly His Cys Val Asp Leu Pro Asp Thr Gly Leu Cys
    370               375               380

Lys Glu Ser Ile Pro Arg Trp Tyr Tyr Asn Pro Phe Ser Glu His Cys
385               390               395               400

Ala Arg Phe Thr Tyr Gly Gly Cys Tyr Gly Asn Lys Asn Asn Phe Glu
            405               410               415

Glu Glu Gln Gln Cys Leu Glu Ser Cys Arg Gly Ile Ser Lys Lys Asp
            420               425               430

Val Phe Gly Leu Arg Arg Glu Ile Pro Ile Pro Ser Asp Gly Ser Val
            435               440               445

Glu Met Ala Val Ala Val Phe Leu Val Ile Cys Ile Val Val Val Val
    450               455               460

Ala Ile Leu Gly Tyr Cys Phe Phe Lys Asn Gln Arg Lys Asp Phe His
465               470               475               480

Gly His His His His Pro Pro Pro Thr Pro Ala Ser Ser Thr Val Ser
            485               490               495

Thr Thr Glu Asp Thr Glu His Leu Val Tyr Asn His Thr Thr Arg Pro
            500               505               510
```

- 2 -

Leu

<210> 2
<211> 12
<212> PRT
<213> Homo sapiens

<400> 2
Gly Pro Pro Pro Ala Pro Pro Gly Leu Pro Ala Gly
  1   5   10

<210> 3
<211> 7
<212> PRT
<213> Homo sapiens

<400> 3
Thr Gln Gly Phe Gly Gly Ser
  1   5

<210> 4
<211> 2955
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (358)..(2409)

<400> 4
cgctgggtgg tgctggcagc cgtgctgatc ggcctcctct tggtcttgct ggggatcggc 60

ttcctggtgt ggcatttgca gtaccgggac gtgcgtgtcc agaaggtctt caatggctac 120

atgaggatca caaatgagaa ttttgtggat gcctacgaga actccaactc cactgagttt 180

gtaagcctgg ccagcaaggt gaaggacgcg ctgaagctgc tgtacagcgg agtcccattc 240

ctgggcccct accacaagga gtcggctgtg acggccttca gcgagggcag cgtcatcgcc 300

tactactggt ctgagttcag catcccgcag cacctggtgg aggaggccga gcgcgtc   357

atg gcc gag gag cgc gta gtc atg ctg ccc ccg cgg gcg cgc tcc ctg   405
Met Ala Glu Glu Arg Val Val Met Leu Pro Pro Arg Ala Arg Ser Leu
  1   5   10   15

aag tcc ttt gtg gtc acc tca gtg gtg gct ttc ccc acg gac tcc aaa   453
Lys Ser Phe Val Val Thr Ser Val Val Ala Phe Pro Thr Asp Ser Lys
                20   25   30

aca gta cag agg acc cag gac aac agc tgc agc ttt ggc ctg cac gcc   501
Thr Val Gln Arg Thr Gln Asp Asn Ser Cys Ser Phe Gly Leu His Ala
                35   40   45

cgc ggt gtg gag ctg atg cgc ttc acc acg ccc ggc ttc cct gac agc   549
Arg Gly Val Glu Leu Met Arg Phe Thr Thr Pro Gly Phe Pro Asp Ser
      50   55   60

- 3 -

```
ccc tac ccc gct cat gcc cgc tgc cag tgg gcc ctg cgg ggg gac gcc    597
Pro Tyr Pro Ala His Ala Arg Cys Gln Trp Ala Leu Arg Gly Asp Ala
 65                  70                  75                  80

gac tca gtg ctg agc ctc acc ttc cgc agc ttt gac ctt gcg tcc tgc    645
Asp Ser Val Leu Ser Leu Thr Phe Arg Ser Phe Asp Leu Ala Ser Cys
                     85                  90                  95

gac gag cgc ggc agc gac ctg gtg acg gtg tac aac acc ctg agc ccc    693
Asp Glu Arg Gly Ser Asp Leu Val Thr Val Tyr Asn Thr Leu Ser Pro
                100                 105                 110

atg gag ccc cac gcc ctg gtg cag ttg tgt ggc acc tac cct ccc tcc    741
Met Glu Pro His Ala Leu Val Gln Leu Cys Gly Thr Tyr Pro Pro Ser
            115                 120                 125

tac aac ctg acc ttc cac tcc tcc cag aac gtc ctg ctc atc aca ctg    789
Tyr Asn Leu Thr Phe His Ser Ser Gln Asn Val Leu Leu Ile Thr Leu
        130                 135                 140

ata acc aac act gag cgg cgg cat ccc ggc ttt gag gcc acc ttc ttc    837
Ile Thr Asn Thr Glu Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe
145                 150                 155                 160

cag ctg cct agg atg agc agc tgt gga ggc cgc tta cgt aaa gcc cag    885
Gln Leu Pro Arg Met Ser Ser Cys Gly Gly Arg Leu Arg Lys Ala Gln
                165                 170                 175

ggg aca ttc aac agc ccc tac tac cca ggc cac tac cca ccc aac att    933
Gly Thr Phe Asn Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile
                180                 185                 190

gac tgc aca tgg aac att gag gtg ccc aac aac cag cat gtg aag gtg    981
Asp Cys Thr Trp Asn Ile Glu Val Pro Asn Asn Gln His Val Lys Val
            195                 200                 205

cgc ttc aaa ttc ttc tac ctg ctg gag ccc cgg cgt gcc tgc ggc acc   1029
Arg Phe Lys Phe Phe Tyr Leu Leu Glu Pro Arg Arg Ala Cys Gly Thr
        210                 215                 220

tgc ccc aag gac tac gtg gag atc aat ggg gag aaa tac tgc gga gag   1077
Cys Pro Lys Asp Tyr Val Glu Ile Asn Gly Glu Lys Tyr Cys Gly Glu
225                 230                 235                 240

agg tcc cag ttc gtc gtc acc agc aac agc aac aag atc aca gtt cgc   1125
Arg Ser Gln Phe Val Val Thr Ser Asn Ser Asn Lys Ile Thr Val Arg
                245                 250                 255

ttc cac tca gat cag tcc tac acc gac acc ggc ttc tta gct gaa tac   1173
Phe His Ser Asp Gln Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr
                260                 265                 270

ctc tcc tac gac tcc agt gac cca tgc ccg ggg cag ttc acg tgc cgc   1221
Leu Ser Tyr Asp Ser Ser Asp Pro Cys Pro Gly Gln Phe Thr Cys Arg
        275                 280                 285

acg ggg cgg tgt atc cgg aag gag ctg cgc tgt gat ggc tgg gcc gac   1269
Thr Gly Arg Cys Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp
        290                 295                 300
```

- 4 -

```
tgc acc gac cac agc gat gag ctc aac tgc agt tgc gac gcc ggc cac    1317
Cys Thr Asp His Ser Asp Glu Leu Asn Cys Ser Cys Asp Ala Gly His
305             310             315             320

cag ttc acg tgc aag aac aag ttc tgc aag ccc ctc ttc tgg gtc tgc    1365
Gln Phe Thr Cys Lys Asn Lys Phe Cys Lys Pro Leu Phe Trp Val Cys
            325             330             335

gac agt gtg aac gac tgc gga gac aac agc gac gag cag ggg tgc agt    1413
Asp Ser Val Asn Asp Cys Gly Asp Asn Ser Asp Glu Gln Gly Cys Ser
            340             345             350

tgt ccg gcc cag acc ttc agg tgt tcc aat ggg aag tgc ctc tcg aaa    1461
Cys Pro Ala Gln Thr Phe Arg Cys Ser Asn Gly Lys Cys Leu Ser Lys
        355             360             365

agc cag cag tgc aat ggg aag gac gac tgt ggg gac ggg tcc gac gag    1509
Ser Gln Gln Cys Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu
    370             375             380

gcc tcc tgc ccc aag gtg aac gtc gtc act tgt acc aaa cac acc tac    1557
Ala Ser Cys Pro Lys Val Asn Val Val Thr Cys Thr Lys His Thr Tyr
385             390             395             400

cgc tgc ctc aat ggg ctc tgc ttg agc aag ggc aac cct gag tgt gac    1605
Arg Cys Leu Asn Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp
            405             410             415

ggg aag gag gac tgt agc gac ggc tca gat gag aag gac tgc gac tgt    1653
Gly Lys Glu Asp Cys Ser Asp Gly Ser Asp Glu Lys Asp Cys Asp Cys
            420             425             430

ggg ctg cgg tca ttc acg aga cag gct cgt gtt gtt ggg ggc acg gat    1701
Gly Leu Arg Ser Phe Thr Arg Gln Ala Arg Val Val Gly Gly Thr Asp
        435             440             445

gcg gat gag ggc gag tgg ccc tgg cag gta agc ctg cat gct ctg ggc    1749
Ala Asp Glu Gly Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly
    450             455             460

cag ggc cac atc tgc ggt gct tcc ctc atc tct ccc aac tgg ctg gtc    1797
Gln Gly His Ile Cys Gly Ala Ser Leu Ile Ser Pro Asn Trp Leu Val
465             470             475             480

tct gcc gca cac tgc tac atc gat gac aga gga ttc agg tac tca gac    1845
Ser Ala Ala His Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr Ser Asp
            485             490             495

ccc acg cag tgg acg gcc ttc ctg ggc ttg cac gac cag agc cag cgc    1893
Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu His Asp Gln Ser Gln Arg
            500             505             510

agc gcc cct ggg gtg cag gag cgc agg ctc aag cgc atc atc tcc cac    1941
Ser Ala Pro Gly Val Gln Glu Arg Arg Leu Lys Arg Ile Ile Ser His
        515             520             525

ccc ttc ttc aat gac ttc acc ttc gac tat gac atc gcg ctg ctg gag    1989
Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu
    530             535             540
```

- 5 -

```
ctg gag aaa ccg gca gag tac agc tcc atg gtg cgg ccc atc tgc ctg    2037
Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met Val Arg Pro Ile Cys Leu
545                 550                 555                 560

ccg gac gcc tcc cat gtc ttc cct gcc ggc aag gcc atc tgg gtc acg    2085
Pro Asp Ala Ser His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr
                565                 570                 575

ggc tgg gga cac acc cag tat gga ggc act ggc gcg ctg atc ctg caa    2133
Gly Trp Gly His Thr Gln Tyr Gly Gly Thr Gly Ala Leu Ile Leu Gln
                580                 585                 590

aag ggt gag atc cgc gtc atc aac cag acc acc tgc gag aac ctc ctg    2181
Lys Gly Glu Ile Arg Val Ile Asn Gln Thr Thr Cys Glu Asn Leu Leu
            595                 600                 605

ccg cag cag atc acg ccg cgc atg atg tgc gtg ggc ttc ctc agc ggc    2229
Pro Gln Gln Ile Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly
        610                 615                 620

ggc gtg gac tcc tgc cag ggt gat tcc ggg gga ccc ctg tcc agc gtg    2277
Gly Val Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Val
625                 630                 635                 640

gag gcg gat ggg cgg atc ttc cag gcc ggt gtg gtg agc tgg gga gac    2325
Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly Val Val Ser Trp Gly Asp
                645                 650                 655

ggc tgc gct cag agg aac aag cca ggc gtg tac aca agg ctc cct ctg    2373
Gly Cys Ala Gln Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu Pro Leu
                660                 665                 670

ttt cgg gac tgg atc aaa gag aac act ggg gta tag gggccggggc        2419
Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly Val
                675                 680

cacccaaatg tgtacacctg cggggccacc catcgtccac cccagtgtgc acgcctgcag 2479

gctggagact ggaccgctga ctgcaccagc gcccccagaa catacactgt gaactcaatc 2539

tccagggctc caaatctgcc tagaaaacct ctcgcttcct cagcctccaa agtggagctg 2599

ggaggtagaa ggggaggaca ctggtggttc tactgaccca actggggggca aaggtttgaa 2659

gacacagcct ccccgccag ccccaagctg ggccgaggcg cgtttgtgta tatctgcctc 2719

ccctgtctgt aaggagcagc gggaacggag cttcggagcc tcctcagtga aggtggtggg 2779

gctgccggat ctgggctgtg gggcccttgg gccacgctct tgaggaagcc caggctcgga 2839

ggaccctgga aaacagacgg gtctgagact gaaaatggtt taccagctcc caggtgactt 2899

cagtgtgtgt attgtgtaaa tgagtaaaac attttatttc tttttaaaaa aaaaaa      2955


<210> 5
<211> 683
<212> PRT
<213> Homo sapiens
```

<400> 5

Met Ala Glu Glu Arg Val Val Met Leu Pro Pro Arg Ala Arg Ser Leu
1   5   10   15

Lys Ser Phe Val Val Thr Ser Val Val Ala Phe Pro Thr Asp Ser Lys
            20   25   30

Thr Val Gln Arg Thr Gln Asp Asn Ser Cys Ser Phe Gly Leu His Ala
        35   40   45

Arg Gly Val Glu Leu Met Arg Phe Thr Thr Pro Gly Phe Pro Asp Ser
    50   55   60

Pro Tyr Pro Ala His Ala Arg Cys Gln Trp Ala Leu Arg Gly Asp Ala
65   70   75   80

Asp Ser Val Leu Ser Leu Thr Phe Arg Ser Phe Asp Leu Ala Ser Cys
            85   90   95

Asp Glu Arg Gly Ser Asp Leu Val Thr Val Tyr Asn Thr Leu Ser Pro
        100   105   110

Met Glu Pro His Ala Leu Val Gln Leu Cys Gly Thr Tyr Pro Pro Ser
    115   120   125

Tyr Asn Leu Thr Phe His Ser Ser Gln Asn Val Leu Leu Ile Thr Leu
    130   135   140

Ile Thr Asn Thr Glu Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe
145   150   155   160

Gln Leu Pro Arg Met Ser Ser Cys Gly Gly Arg Leu Arg Lys Ala Gln
            165   170   175

Gly Thr Phe Asn Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile
            180   185   190

Asp Cys Thr Trp Asn Ile Glu Val Pro Asn Asn Gln His Val Lys Val
        195   200   205

Arg Phe Lys Phe Phe Tyr Leu Leu Glu Pro Arg Arg Ala Cys Gly Thr
    210   215   220

Cys Pro Lys Asp Tyr Val Glu Ile Asn Gly Glu Lys Tyr Cys Gly Glu
225   230   235   240

Arg Ser Gln Phe Val Val Thr Ser Asn Ser Asn Lys Ile Thr Val Arg
            245   250   255

Phe His Ser Asp Gln Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr
        260   265   270

Leu Ser Tyr Asp Ser Ser Asp Pro Cys Pro Gly Gln Phe Thr Cys Arg
    275   280   285

Thr Gly Arg Cys Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp
    290   295   300

Cys Thr Asp His Ser Asp Glu Leu Asn Cys Ser Cys Asp Ala Gly His
305   310   315   320

- 7 -

```
Gln Phe Thr Cys Lys Asn Lys Phe Cys Lys Pro Leu Phe Trp Val Cys
            325             330             335

Asp Ser Val Asn Asp Cys Gly Asp Asn Ser Asp Glu Gln Gly Cys Ser
            340             345             350

Cys Pro Ala Gln Thr Phe Arg Cys Ser Asn Gly Lys Cys Leu Ser Lys
        355             360             365

Ser Gln Gln Cys Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu
        370             375             380

Ala Ser Cys Pro Lys Val Asn Val Val Thr Cys Thr Lys His Thr Tyr
385             390             395             400

Arg Cys Leu Asn Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp
            405             410             415

Gly Lys Glu Asp Cys Ser Asp Gly Ser Asp Glu Lys Asp Cys Asp Cys
            420             425             430

Gly Leu Arg Ser Phe Thr Arg Gln Ala Arg Val Val Gly Gly Thr Asp
        435             440             445

Ala Asp Glu Gly Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly
        450             455             460

Gln Gly His Ile Cys Gly Ala Ser Leu Ile Ser Pro Asn Trp Leu Val
465             470             475             480

Ser Ala Ala His Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr Ser Asp
            485             490             495

Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu His Asp Gln Ser Gln Arg
            500             505             510

Ser Ala Pro Gly Val Gln Glu Arg Arg Leu Lys Arg Ile Ile Ser His
        515             520             525

Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu
    530             535             540

Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met Val Arg Pro Ile Cys Leu
545             550             555             560

Pro Asp Ala Ser His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr
            565             570             575

Gly Trp Gly His Thr Gln Tyr Gly Gly Thr Gly Ala Leu Ile Leu Gln
        580             585             590

Lys Gly Glu Ile Arg Val Ile Asn Gln Thr Thr Cys Glu Asn Leu Leu
        595             600             605

Pro Gln Gln Ile Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly
    610             615             620

Gly Val Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Val
625             630             635             640

Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly Val Val Ser Trp Gly Asp
            645             650             655
```

-8-

Gly Cys Ala Gln Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu Pro Leu
            660   665   670

Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly Val
        675   680

<210> 6
<211> 253
<212> PRT
<213> Homo sapiens

<400> 6
Asp Cys Gly Leu Arg Ser Phe Thr Arg Gln Ala Arg Val Val Gly Gly
 1   5   10   15

Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val Ser Leu His Ala
            20   25   30

Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile Ser Pro Asn Trp
        35   40   45

Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr
     50   55   60

Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu His Asp Gln Ser
65   70   75   80

Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu Lys Arg Ile Ile
                85   90   95

Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu
            100   105   110

Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met Val Arg Pro Ile
        115   120   125

Cys Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly Lys Ala Ile Trp
    130   135   140

Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr Gly Ala Leu Ile
145   150   155   160

Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr Thr Cys Glu Asn
                165   170   175

Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys Val Gly Phe Leu
            180   185   190

Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser
        195   200   205

Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly Val Val Ser Trp
    210   215   220

Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu
225   230   235   240

Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly Val
            245   250

- 9 -

<210> 7
<211> 249
<212> PRT
<213> Homo sapiens

<400> 7

```
Ser Cys Gly Lys Lys Leu Ala Ala Gln Asp Ile Thr Pro Lys Ile Val
 1               5                  10                  15

Gly Gly Ser Asn Ala Lys Glu Gly Ala Trp Pro Trp Val Val Gly Leu
            20                  25                  30

Tyr Tyr Gly Gly Arg Leu Leu Cys Gly Ala Ser Leu Val Ser Ser Asp
        35                  40                  45

Trp Leu Val Ser Ala Ala His Cys Tyr Tyr Gly Arg Asn Leu Glu Pro
    50                  55                  60

Ser Lys Trp Thr Ala Ile Leu Gly Leu His Met Lys Ser Asn Leu Thr
65                  70                  75                  80

Ser Pro Gln Thr Val Pro Arg Leu Ile Asp Glu Ile Val Ile Asn Pro
                85                  90                  95

His Tyr Asn Arg Arg Arg Lys Asp Asn Asp Ile Ala Met Met His Leu
            100                 105                 110

Glu Phe Lys Val Asn Tyr Thr Asp Tyr Ile Gln Pro Ile Cys Leu Pro
        115                 120                 125

Glu Glu Asn Gln Val Phe Pro Pro Gly Arg Asn Cys Ser Ile Ala Gly
    130                 135                 140

Trp Gly Thr Val Val Tyr Gln Gly Thr Thr Ala Asn Ile Leu Gln Glu
145                 150                 155                 160

Ala Asp Val Pro Leu Leu Ser Asn Glu Arg Cys Gln Gln Gln Met Pro
                165                 170                 175

Glu Tyr Asn Ile Thr Glu Asn Met Ile Cys Ala Gly Tyr Glu Glu Gly
            180                 185                 190

Gly Ile Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Met Cys Gln
            195                 200                 205

Glu Asn Asn Arg Trp Phe Leu Ala Gly Val Thr Ser Phe Gly Tyr Lys
    210                 215                 220

Cys Ala Leu Pro Asn Arg Pro Gly Val Tyr Ala Arg Val Ser Arg Phe
225                 230                 235                 240

Thr Glu Trp Ile Gln Ser Phe Leu His
                245
```

<210> 8
<211> 250
<212> PRT
<213> Homo sapiens

<400> 8

30428741v1

Ala Cys Gly Val Asn Leu Asn Ser Ser Arg Gln Ser Arg Ile Val Gly
1   5   10   15

Gly Glu Ser Ala Leu Pro Gly Ala Trp Pro Trp Gln Val Ser Leu His
            20   25   30

Val Gln Asn Val His Val Cys Gly Gly Ser Ile Ile Thr Pro Glu Trp
        35   40   45

Ile Val Thr Ala Ala His Cys Val Glu Lys Pro Leu Asn Asn Pro Trp
    50   55   60

His Trp Thr Ala Phe Ala Gly Ile Leu Arg Gln Ser Phe Met Phe Tyr
65   70   75   80

Gly Ala Gly Tyr Gln Val Gln Lys Val Ile Ser His Pro Asn Tyr Asp
            85   90   95

Ser Lys Thr Lys Asn Asn Asp Ile Ala Leu Met Lys Leu Gln Lys Pro
        100   105   110

Leu Thr Phe Asn Asp Leu Val Lys Pro Val Cys Leu Pro Asn Pro Gly
        115   120   125

Met Met Leu Gln Pro Glu Gln Leu Cys Trp Ile Ser Gly Trp Gly Ala
    130   135   140

Thr Glu Glu Lys Gly Lys Thr Ser Glu Val Leu Asn Ala Ala Lys Val
145   150   155   160

Leu Leu Ile Glu Thr Gln Arg Cys Asn Ser Arg Tyr Val Tyr Asp Asn
            165   170   175

Leu Ile Thr Pro Ala Met Ile Cys Ala Gly Phe Leu Gln Gly Asn Val
        180   185   190

Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Thr Ser Asn Asn
        195   200   205

Asn Ile Trp Trp Leu Ile Gly Asp Thr Ser Trp Gly Ser Gly Cys Ala
    210   215   220

Lys Ala Tyr Arg Pro Gly Val Tyr Gly Asn Val Met Val Phe Thr Asp
225   230   235   240

Trp Ile Tyr Arg Gln Met Lys Ala Asn Gly
            245   250

<210> 9
<211> 257
<212> PRT
<213> Homo sapiens

<400> 9
Glu Cys Gly Val Pro Thr Leu Ala Arg Pro Glu Thr Arg Ile Val Gly
1   5   10   15

Gly Lys Ser Ala Ala Phe Gly Arg Trp Pro Trp Gln Val Ser Val Arg
            20   25   30

- 11 -

30428741v1

```
Arg Thr Ser Phe Phe Gly Phe Ser Ser Thr His Arg Cys Gly Gly Ala
        35              40              45

Leu Ile Asn Glu Asn Trp Ile Ala Thr Ala Gly His Cys Val Asp Asp
        50              55              60

Leu Leu Ile Ser Gln Ile Arg Ile Arg Val Gly Glu Tyr Asp Phe Ser
65              70              75              80

His Val Gln Glu Gln Leu Pro Tyr Ile Glu Arg Gly Val Ala Lys Lys
                85              90              95

Val Val His Pro Lys Tyr Ser Phe Leu Thr Tyr Glu Tyr Asp Leu Ala
            100             105             110

Leu Val Lys Leu Glu Gln Pro Leu Glu Phe Ala Pro His Val Ser Pro
        115             120             125

Ile Cys Leu Pro Glu Thr Asp Ser Leu Leu Ile Gly Met Asn Ala Thr
    130             135             140

Val Thr Gly Trp Gly Arg Leu Ser Glu Gly Gly Thr Leu Pro Ser Val
145             150             155             160

Leu Gln Glu Val Ser Val Pro Ile Val Ser Asn Asp Asn Cys Lys Ser
            165             170             175

Met Phe Met Arg Ala Gly Arg Gln Glu Phe Ile Pro Asp Ile Phe Leu
        180             185             190

Cys Ala Gly Tyr Glu Thr Gly Gly Gln Asp Ser Cys Gln Gly Asp Ser
        195             200             205

Gly Gly Pro Leu Gln Ala Lys Ser Gln Asp Gly Arg Phe Phe Leu Ala
    210             215             220

Gly Ile Ile Ser Trp Gly Ile Gly Cys Ala Glu Ala Asn Leu Pro Gly
225             230             235             240

Val Cys Thr Arg Ile Ser Lys Phe Thr Pro Trp Ile Leu Glu His Val
            245             250             255

Arg
```

```
<210> 10
<211> 259
<212> PRT
<213> Homo sapiens

<400> 10
Asp Cys Gly Arg Arg Lys Leu Pro Val Asp Arg Ile Val Gly Gly Arg
 1               5               10              15

Asp Thr Ser Leu Gly Arg Trp Pro Trp Gln Val Ser Leu Arg Tyr Asp
            20              25              30

Gly Ala His Leu Cys Gly Gly Ser Leu Leu Ser Gly Asp Trp Val Leu
        35              40              45

Thr Ala Ala His Cys Phe Pro Glu Arg Asn Arg Val Leu Ser Arg Trp
        50              55              60
```

```
Arg Val Phe Ala Gly Ala Val Ala Gln Ala Ser Pro His Gly Leu Gln
65                  70                  75                      80

Leu Gly Val Gln Ala Val Val Tyr His Gly Gly Tyr Leu Pro Phe Arg
                85              90                      95

Asp Pro Asn Ser Glu Glu Asn Ser Asn Asp Ile Ala Leu Val His Leu
            100                 105                 110

Ser Ser Pro Leu Pro Leu Thr Glu Tyr Ile Gln Pro Val Cys Leu Pro
        115             120                 125

Ala Ala Gly Gln Ala Leu Val Asp Gly Lys Ile Cys Thr Val Thr Gly
        130             135                 140

Trp Gly Asn Thr Gln Tyr Tyr Gly Gln Gln Ala Gly Val Leu Gln Glu
145                 150                 155                 160

Ala Arg Val Pro Ile Ile Ser Asn Asp Val Cys Asn Gly Ala Asp Phe
                165                 170                 175

Tyr Gly Asn Gln Ile Lys Pro Lys Met Phe Cys Ala Gly Tyr Pro Glu
            180                 185                 190

Gly Gly Ile Asp Ala Cys Gln Gly Asp Ser Gly Gly Pro Phe Val Cys
        195                 200                 205

Glu Asp Ser Ile Ser Arg Thr Pro Arg Trp Arg Leu Cys Gly Ile Val
    210                 215                 220

Ser Trp Gly Thr Gly Cys Ala Leu Ala Gln Lys Pro Gly Val Tyr Thr
225                 230                 235                 240

Lys Val Ser Asp Phe Arg Glu Trp Ile Phe Gln Ala Ile Lys Thr His
                245                 250                 255

Ser Glu Ala


<210> 11
<211> 247
<212> PRT
<213> Homo sapiens

<400> 11
Glu Cys Thr Thr Lys Ile Lys Pro Arg Ile Val Gly Gly Thr Ala Ser
 1           5                  10                  15

Val Arg Gly Glu Trp Pro Trp Gln Val Thr Leu His Thr Thr Ser Pro
            20                  25                  30

Thr Gln Arg His Leu Cys Gly Gly Ser Ile Ile Gly Asn Gln Trp Ile
        35                  40                  45

Leu Thr Ala Ala His Cys Phe Tyr Gly Val Glu Ser Pro Lys Ile Leu
        50                  55                  60

Arg Val Tyr Ser Gly Ile Leu Asn Gln Ser Glu Ile Lys Glu Asp Thr
65                  70                  75                  80
```

```
Ser Phe Phe Gly Val Gln Glu Ile Ile Ile His Asp Gln Tyr Lys Met
                85                  90                  95

Ala Glu Ser Gly Tyr Asp Ile Ala Leu Leu Lys Leu Glu Thr Thr Val
            100             105             110

Asn Tyr Thr Asp Ser Gln Arg Pro Ile Cys Leu Pro Ser Lys Gly Asp
        115             120             125

Arg Asn Val Ile Tyr Thr Asp Cys Trp Val Thr Gly Trp Gly Tyr Arg
    130             135             140

Lys Leu Arg Asp Lys Ile Gln Asp Thr Leu Gln Lys Ala Lys Ile Pro
145             150             155             160

Leu Val Thr Asn Glu Glu Cys Gln Lys Arg Tyr Arg Gly His Lys Ile
            165             170             175

Thr His Lys Met Ile Cys Ala Gly Tyr Arg Glu Gly Gly Lys Asp Ala
            180             185             190

Cys Lys Gly Asp Ser Gly Gly Pro Leu Ser Cys Lys His Asn Glu Val
            195             200             205

Trp His Leu Val Gly Ile Thr Ser Trp Gly Glu Gly Cys Ala Gln Arg
    210             215             220

Glu Arg Pro Gly Val Tyr Thr Asn Val Val Glu Tyr Val Asp Trp Ile
225             230             235             240

Leu Glu Lys Thr Gln Ala Val
                245


<210> 12
<211> 244
<212> PRT
<213> Homo sapiens

<400> 12
Asp Cys Gly Lys Pro Gln Val Glu Pro Lys Lys Cys Pro Gly Arg Val
1               5               10              15

Val Gly Gly Cys Val Ala His Pro His Ser Trp Pro Trp Gln Val Ser
            20              25              30

Leu Arg Thr Arg Phe Gly Met His Phe Cys Gly Gly Thr Leu Ile Ser
            35              40              45

Pro Glu Trp Val Leu Thr Ala Ala His Cys Leu Glu Lys Ser Pro Arg
        50              55              60

Pro Ser Ser Tyr Lys Val Ile Leu Gly Ala His Gln Glu Val Asn Leu
65              70              75              80

Glu Pro His Val Gln Glu Ile Glu Val Ser Arg Leu Phe Leu Glu Pro
                85              90              95

Thr Arg Lys Asp Ile Ala Leu Leu Lys Leu Ser Ser Pro Ala Val Ile
            100             105             110
```

- 14 -

Thr Asp Lys Val Ile Pro Ala Cys Leu Pro Ser Pro Asn Tyr Val Val
        115   120   125

Ala Asp Arg Thr Glu Cys Phe Ile Thr Gly Trp Gly Glu Thr Gln Gly
        130   135   140

Thr Phe Gly Ala Gly Leu Leu Glu Ala Gln Leu Pro Val Ile Glu Asn
145   150   155   160

Lys Val Cys Asn Arg Tyr Glu Phe Leu Asn Gly Arg Val Gln Ser Thr
                165   170   175

Glu Leu Cys Ala Gly His Leu Ala Gly Gly Thr Asp Ser Cys Gln Gly
            180   185   190

Asp Ser Gly Gly Pro Leu Val Cys Phe Glu Lys Asp Lys Tyr Ile Leu
        195   200   205

Gln Gly Val Thr Ser Trp Gly Leu Gly Cys Ala Arg Pro Asn Lys Pro
        210   215   220

Gly Val Tyr Val Arg Val Ser Arg Phe Val Thr Trp Ile Glu Gly Val
225   230   235   240

Met Arg Asn Asn

<210> 13
<211> 234
<212> PRT
<213> Homo sapiens

<400> 13
Val Ala Ala Pro Phe Asp Asp Asp Lys Ile Val Gly Gly Tyr Ile
  1   5   10   15

Cys Glu Glu Asn Ser Val Pro Tyr Gln Val Ser Leu Asn Ser Gly Tyr
            20   25   30

His Phe Cys Gly Gly Ser Leu Ile Ser Glu Gln Trp Val Val Ser Ala
        35   40   45

Gly His Cys Tyr Lys Ser Arg Ile Gln Val Arg Leu Gly Glu His Asn
        50   55   60

Ile Glu Val Leu Glu Gly Asn Glu Gln Phe Ile Asn Ala Ala Lys Ile
65   70   75   80

Ile Arg His Pro Lys Tyr Asn Ser Arg Thr Leu Asp Asn Asp Ile Leu
            85   90   95

Leu Ile Lys Leu Ser Ser Pro Ala Val Ile Asn Ser Arg Val Ser Ala
        100   105   110

Ile Ser Leu Pro Thr Ala Pro Pro Ala Ala Gly Thr Glu Ser Leu Ile
        115   120   125

Ser Gly Trp Gly Asn Thr Leu Ser Ser Gly Ala Asp Tyr Pro Asp Glu
        130   135   140

Leu Gln Cys Leu Asp Ala Pro Val Leu Ser Gln Ala Glu Cys Glu Ala
145   150   155   160

- 15 -

```
Ser Tyr Pro Gly Lys Ile Thr Asn Asn Met Phe Cys Val Gly Phe Leu
                165             170             175

Glu Gly Gly Lys Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Val Val
            180             185             190

Ser Asn Gly Glu Leu Gln Gly Ile Val Ser Trp Gly Tyr Gly Cys Ala
        195             200             205

Gln Lys Asn Arg Pro Gly Val Tyr Thr Lys Val Tyr Asn Tyr Val Asp
    210             215             220

Trp Ile Lys Asp Thr Ile Ala Ala Asn Ser
225             230
```

<210> 14
<211> 240
<212> PRT
<213> Homo sapiens

<400> 14
```
Ile His Pro Val Leu Ser Gly Leu Ser Arg Ile Val Asn Gly Glu Asp
  1             5             10              15

Ala Val Pro Gly Ser Trp Pro Trp Gln Val Ser Leu Gln Asp Lys Thr
            20              25              30

Gly Phe His Phe Cys Gly Gly Ser Leu Ile Ser Glu Asp Trp Val Val
        35              40              45

Thr Ala Ala His Cys Gly Val Arg Thr Ser Asp Val Val Val Ala Gly
        50              55              60

Glu Phe Asp Gln Gly Ser Asp Glu Glu Asn Ile Gln Val Leu Lys Ile
 65             70              75              80

Ala Lys Val Phe Lys Asn Pro Lys Phe Ser Ile Leu Thr Val Asn Asn
                85              90              95

Asp Ile Thr Leu Leu Lys Leu Ala Thr Pro Ala Arg Phe Ser Gln Thr
            100             105             110

Val Ser Ala Val Cys Leu Pro Ser Ala Asp Asp Asp Phe Pro Ala Gly
        115             120             125

Thr Leu Cys Ala Thr Thr Gly Trp Gly Lys Thr Lys Tyr Asn Ala Asn
    130             135             140

Lys Thr Pro Asp Lys Leu Gln Gln Ala Ala Leu Pro Leu Leu Ser Asn
145             150             155             160

Ala Glu Cys Lys Lys Ser Trp Gly Arg Arg Ile Thr Asp Val Asn Ile
                165             170             175

Cys Ala Gly Ala Ser Gly Val Ser Ser Cys Met Gly Asp Ser Gly Gly
            180             185             190

Pro Leu Val Cys Gln Lys Asp Gly Ala Trp Thr Leu Val Gly Ile Val
        195             200             205
```

Ser Trp Gly Ser Asp Thr Cys Ser Thr Ser Ser Pro Gly Val Tyr Ala
    210   215   220

Arg Val Thr Lys Leu Ile Pro Trp Val Gln Lys Ile Leu Ala Ala Asn
225   230   235   240

<210> 15
<211> 145
<212> PRT
<213> Homo sapiens

<400> 15
Pro Cys Pro Gly Gln Phe Thr Cys Arg Thr Gly Arg Cys Ile Arg Lys
  1   5   10   15

Glu Leu Arg Cys Asp Gly Trp Ala Asp Cys Thr Asp His Ser Asp Glu
            20   25   30

Leu Asn Cys Ser Cys Asp Ala Gly His Gln Phe Thr Cys Lys Asn Lys
        35   40   45

Phe Cys Lys Pro Leu Phe Trp Val Cys Asp Ser Val Asn Asp Cys Gly
    50   55   60

Asp Asn Ser Asp Glu Gln Gly Ser Ser Cys Pro Ala Gln Thr Phe Arg
65   70   75   80

Cys Ser Asn Gly Lys Cys Leu Ser Lys Ser Gln Gln Cys Asn Gly Lys
            85   90   95

Asp Asp Cys Gly Asp Gly Ser Asp Glu Ala Ser Cys Thr Cys Thr Lys
        100   105   110

His Thr Tyr Arg Cys Leu Asn Gly Leu Cys Leu Ser Lys Gly Asn Pro
    115   120   125

Glu Cys Asp Gly Lys Glu Asp Cys Ser Asp Gly Ser Asp Glu Lys Asp
    130   135   140

Cys
145

<210> 16
<211> 19
<212> PRT
<213> Homo sapiens

<400> 16
Thr Cys Glu Phe Cys Gly Cys Ile Trp Cys Asp Asp Cys Asp Gly Ser
  1   5   10   15

Asp Glu Cys

<210> 17
<211> 18
<212> PRT
<213> Homo sapiens

<400> 17

```
Cys Phe Cys Arg Cys Ile Pro Trp Cys Asp Gly Asp Cys Asp Ser Asp
 1                   5                  10                  15

Glu Cys


<210> 18
<211> 16
<212> PRT
<213> Homo sapiens

<400> 18
Pro Cys Pro Glu Phe Cys Cys Cys Asp Asp Cys Asp Ser Asp Glu Cys
 1                   5                  10                  15


<210> 19
<211> 16
<212> PRT
<213> Homo sapiens

<400> 19
Cys Phe Cys Cys Ile Cys Asp Gly Asp Cys Asp Gly Ser Asp Glu Cys
 1                   5                  10                  15


<210> 20
<211> 114
<212> PRT
<213> Homo sapiens

<400> 20
Cys Ser Phe Gly Leu His Ala Arg Gly Val Glu Leu Met Arg Phe Thr
 1                   5                  10                  15

Thr Pro Gly Phe Pro Asp Ser Pro Tyr Pro Ala His Ala Arg Cys Gln
                20              25                  30

Trp Ala Leu Arg Gly Asp Ala Asp Ser Val Leu Ser Leu Thr Phe Arg
            35              40                  45

Ser Phe Asp Leu Ala Ser Cys Asp Glu Arg Gly Ser Asp Leu Val Thr
        50              55                  60

Val Tyr Asn Thr Leu Ser Pro Met Glu Pro His Ala Leu Val Gln Leu
 65                  70                  75                  80

Cys Gly Thr Tyr Pro Pro Ser Tyr Asn Leu Thr Phe His Ser Ser Gln
                85                  90                  95

Asn Val Leu Leu Ile Thr Leu Ile Thr Asn Thr Glu Arg Arg His Pro
            100                 105                 110

Gly Phe


<210> 21
<211> 101
<212> PRT
<213> Homo sapiens

<400> 21
```

Cys Gly Gly Arg Leu Arg Lys Ala Gln Gly Thr Phe Asn Ser Pro Tyr
 1   5   10   15

Tyr Pro Gly His Tyr Pro Pro Asn Ile Asp Cys Thr Trp Asn Ile Glu
            20   25   30

Val Pro Asn Asn Gln His Val Lys Val Arg Phe Lys Phe Phe Tyr Leu
        35   40   45

Leu Glu Pro Gly Val Pro Ala Gly Thr Cys Pro Lys Asp Tyr Val Glu
    50   55   60

Ile Asn Gly Glu Lys Tyr Cys Gly Glu Arg Ser Gln Phe Val Val Thr
65   70   75   80

Ser Asn Ser Asn Lys Ile Thr Val Arg Phe His Ser Asp Gln Ser Tyr
            85   90   95

Thr Asp Thr Gly Phe
            100

<210> 22
<211> 106
<212> PRT
<213> Homo sapiens

<400> 22
Cys Ser Ser Glu Leu Tyr Thr Glu Ala Ser Gly Tyr Ile Ser Ser Leu
 1   5   10   15

Glu Tyr Pro Arg Ser Tyr Pro Pro Asp Leu Arg Cys Asn Tyr Ser Ile
            20   25   30

Arg Val Glu Arg Gly Leu Thr Leu His Leu Lys Phe Leu Glu Pro Phe
        35   40   45

Asp Ile Asp Asp His Gln Gln Val His Cys Pro Tyr Asp Gln Leu Gln
    50   55   60

Ile Tyr Ala Asn Gly Lys Asn Ile Gly Glu Phe Cys Gly Lys Gln Arg
65   70   75   80

Pro Pro Asp Leu Asp Thr Ser Ser Asn Ala Val Asp Leu Leu Phe Phe
            85   90   95

Thr Asp Glu Ser Gly Asp Ser Arg Gly Trp
            100   105

<210> 23
<211> 109
<212> PRT
<213> Homo sapiens

<400> 23
Cys Ser Gly Asp Val Phe Thr Ala Leu Ile Gly Glu Ile Ala Ser Pro
 1   5   10   15

Asn Tyr Pro Lys Pro Tyr Pro Glu Asn Ser Arg Cys Glu Tyr Gln Ile
            20   25   30

30428741v1

```
Arg Leu Glu Lys Gly Phe Gln Val Val Val Thr Leu Arg Arg Glu Asp
        35              40              45

Phe Asp Val Glu Ala Ala Asp Ser Ala Gly Asn Cys Leu Asp Ser Leu
    50              55              60

Val Phe Val Ala Gly Asp Arg Gln Phe Gly Pro Tyr Cys Gly His Gly
65              70              75              80

Phe Pro Gly Pro Leu Asn Ile Glu Thr Lys Ser Asn Ala Leu Asp Ile
                85              90              95

Ile Phe Gln Thr Asp Leu Thr Gly Gln Lys Lys Gly Trp
            100             105


<210> 24
<211> 106
<212> PRT
<213> Homo sapiens

<400> 24
Cys Ser Asp Asn Leu Phe Thr Gln Arg Thr Gly Val Ile Thr Ser Pro
  1           5               10              15

Asp Phe Pro Asn Pro Tyr Pro Lys Ser Ser Glu Cys Leu Tyr Thr Ile
            20              25              30

Glu Leu Glu Glu Gly Phe Met Val Asn Leu Gln Phe Glu Asp Ile Phe
        35              40              45

Asp Ile Glu Asp His Pro Glu Val Pro Cys Pro Tyr Asp Tyr Ile Lys
    50              55              60

Ile Lys Val Gly Pro Lys Val Leu Gly Pro Phe Cys Gly Glu Lys Ala
65              70              75              80

Pro Glu Pro Ile Ser Thr Gln Ser His Ser Val Leu Ile Leu Phe His
                85              90              95

Ser Asp Asn Ser Gly Glu Asn Arg Gly Trp
            100             105


<210> 25
<211> 109
<212> PRT
<213> Homo sapiens

<400> 25
Cys Ser Gly Asp Val Phe Thr Ala Leu Ile Gly Glu Ile Ala Ser Pro
  1           5               10              15

Asn Tyr Pro Lys Pro Tyr Pro Glu Asn Ser Arg Cys Glu Tyr Gln Ile
            20              25              30

Arg Leu Glu Lys Gly Phe Gln Val Val Val Thr Leu Arg Arg Glu Asp
        35              40              45

Phe Asp Val Glu Ala Ala Asp Ser Ala Gly Asn Cys Gln Asp Ser Leu
    50              55              60
```

30428741v1

Leu Phe Ala Ala Lys Asn Arg Gln Phe Gly Pro Phe Cys Gly Asn Gly
 65   70   75   80

Phe Pro Gly Pro Leu Thr Ile Glu Thr His Ser Asn Thr Leu Asp Ile
                 85   90   95

Val Phe Gln Thr Asp Leu Thr Glu Gln Lys Lys Gly Trp
             100   105

<210> 26
<211> 3149
<212> DNA
<213> Homo sapiens

<400> 26
gacgcctgtg agacccgcga gcggcctcgg ggaccatggg gagcgatcgg gcccgcaagg 60
gcggaggggg cccgaaggac ttcggcgcgg gactcaagta caactcccgg cacgagaaag 120
tgaatggctt ggaggaaggc gtggagttcc tgccagtcaa caacgtcaag aaggtggaaa 180
agcatggccc ggggcgctgg gtggtgctgg cagccgtgct gatcggcctc ctcttggtct 240
tgctggggat cggcttcctg gtgtggcatt tgcagtaccg ggacgtgcgt gtccagaagg 300
tcttcaatgg ctacatgagg atcacaaatg agaattttgt ggatgcctac gagaactcca 360
actccactga gtttgtaagc ctggccagca aggtgaagga cgcgctgaag ctgctgtaca 420
gcggagtccc attcctgggc ccctaccaca aggagtcggc tgtgacggcc ttcagcgagg 480
gcagcgtcat cgcctactac tggtctgagt tcagcatccc gcagcacctg gtggaggagg 540
ccgagcgcgt catggccgag gagcgcgtag tcatgctgcc cccgcgggcg cgctccctga 600
agtcctttgt ggtcacctca gtggtggctt tccccacgga ctccaaaaca gtacagagga 660
cccaggacaa cagctgcagc tttggcctgc acgcccgcgg tgtggagctg atgcgcttca 720
ccacgcccgg cttccctgac agcccctacc ccgctcatgc ccgctgccag tgggccctgc 780
ggggggacgc cgactcagtg ctgagcctca ccttccgcag ctttgacctt gcgtcctgcg 840
acgagcgcgg cagcgacctg gtgacggtgt acaacaccct gagccccatg gagcccacg 900
ccctggtgca gttgtgtggc acctaccctc cctcctacaa cctgaccttc cactcctccc 960
agaacgtcct gctcatcaca ctgataacca acactgagcg gcggcatccc ggctttgagg 1020
ccaccttctt ccagctgcct aggatgagca gctgtggagg ccgcttacgt aaagcccagg 1080
ggacattcaa cagcccctac tacccaggcc actacccacc caacattgac tgcacatgga 1140
acattgaggt gcccaacaac cagcatgtga aggtgcgctt caaattcttc tacctgctgg 1200
agcccggcgt gcctgcgggc acctgcccca aggactacgt ggagatcaat ggggagaaat 1260
actgcggaga gaggtcccag ttcgtcgtca ccagcaacag caacaagatc acagttcgct 1320
tccactcaga tcagtcctac accgacaccg cttcttagc tgaatacctc cctacgact 1380
ccagtgaccc atgcccgggg cagttcacgt gccgcacggg gcggtgtatc cggaaggagc 1440
tgcgctgtga tggctgggcc gactgcaccg accacagcga tgagctcaac tgcagttgcg 1500
acgccggcca ccagttcacg tgcaagaaca gttctgcaa gcccctcttc tgggtctgcg 1560
acagtgtgaa cgactgcgga gacaacagcg acgagcaggg gtgcagttgt ccggcccaga 1620
ccttcaggtg ttccaatggg aagtgcctct cgaaaagcca gcagtgcaat gggaaggacg 1680
actgtgggga cgggtccgac gaggcctcct gccccaaggt gaacgtcgtc acttgtacca 1740
aacacaccta ccgctgcctc aatgggctct gcttgagcaa gggcaacccc gagtgtgacg 1800
ggaaggagga ctgtagcgac ggctcagatg agaaggactg cgactgtggg ctgcggtcat 1860
tcacgagaca ggctcgtgtt gttgggggca cggatgcgga tgagggcgag tggccctggc 1920
aggtaagcct gcatgctctg ggccagggcc acatctgcgg tgcttccctc atctctccca 1980
actggctggt ctctgccgca cactgctaca tcgatgacag aggattcagg tactcagacc 2040
ccacgcagtg gacggccttc ctgggcttgc acgaccagag ccagcgcagc gcccctgggg 2100
tgcaggagcg caggctcaag cgcatcatct cccacccctt cttcaatgac ttcaccttcg 2160
actatgacat cgcgctgctg gagctggaga aaccggcaga gtacagctcc atggtgcggc 2220
ccatctgcct gccggacgcc tcccatgtct ccctgccgg caaggccatc tgggtcacgg 2280
gctgggggac acacccagtat ggaggcactg cgcgctgat cctgcaaaag ggtgagatcc 2340
gcgtcatcaa ccagaccacc tgcgagaacc tcctgccgca gcagatcacg ccgcgcatga 2400
tgtgcgtggg cttcctcagc ggcggcgtgg actcctgcca gggtgattcc gggggacccc 2460
tgtccagcgt ggaggcggat gggcggatct tccaggccgg tgtggtgagc tggggagacg 2520
gctgcgctca gaggaacaag ccaggcgtgt acacaaggct ccctctgttt cgggactgga 2580
tcaaagagaa cactggggta tagggggccgg ggccacccaa atgtgtacac ctgcggggcc 2640
acccatcgtc caccccagtg tgcacgcctg caggctggag actggaccgc tgactgcacc 2700
agcgccccca gaacatacac tgtgaactca atctccaggg ctccaaatct gcctagaaaa 2760

```
cctctcgctt cctcagcctc caaagtggag ctgggaggta gaaggggagg acactggtgg 2820
ttctactgac ccaactgggg gcaaaggttt gaagacacag cctcccccgc cagcccccaag 2880
ctgggccgag gcgcgtttgt gtatatctgc ctccctgtc tgtaaggagc agcgggaacg 2940
gagcttcgga gcctcctcag tgaaggtggt ggggctgccg gatctgggct gtggggccct 3000
tgggccacgc tcttgaggaa gcccaggctc ggaggaccct ggaaaacaga cgggtctgag 3060
actgaaaatg gtttaccagc tcccaggtga cttcagtgtg tgtattgtgt aaatgagtaa 3120
aacattttat ttctttttaa aaaaaaaaa                                 3149
```

<210> 27
<211> 855
<212> PRT
<213> Homo sapiens

<400> 27

Met	Gly	Ser	Asp	Arg	Ala	Arg	Lys	Gly	Gly	Gly	Gly	Pro	Lys	Asp	Phe
1				5					10				15		

| Gly | Ala | Gly | Leu | Lys | Tyr | Asn | Ser | Arg | His | Glu | Lys | Val | Asn | Gly | Leu |
| | | 20 | | | | 25 | | | | 30 | | | | | |

| Glu | Glu | Gly | Val | Glu | Phe | Leu | Pro | Val | Asn | Asn | Val | Lys | Lys | Val | Glu |
| | 35 | | | | 40 | | | | 45 | | | | | | |

| Lys | His | Gly | Pro | Gly | Arg | Trp | Val | Val | Leu | Ala | Ala | Val | Leu | Ile | Gly |
| 50 | | | | 55 | | | | 60 | | | | | | | |

| Leu | Leu | Leu | Val | Leu | Leu | Gly | Ile | Gly | Phe | Leu | Val | Trp | His | Leu | Gln |
| 65 | | | | 70 | | | | 75 | | | | | 80 | | |

| Tyr | Arg | Asp | Val | Arg | Val | Gln | Lys | Val | Lys | Asn | Gly | Tyr | Met | Arg | Ile |
| | | | 85 | | | | 90 | | | | 95 | | | | |

| Thr | Asn | Glu | Asn | Phe | Val | Asp | Ala | Tyr | Glu | Asn | Ser | Asn | Ser | Thr | Glu |
| | | 100 | | | | 105 | | | | 110 | | | | | |

| Phe | Val | Ser | Leu | Ala | Ser | Lys | Val | Lys | Asp | Ala | Leu | Lys | Leu | Leu | Tyr |
| | | 115 | | | | 120 | | | | 125 | | | | | |

| Ser | Gly | Val | Pro | Phe | Leu | Gly | Pro | Tyr | His | Lys | Glu | Ser | Ala | Val | Thr |
| | 130 | | | | 135 | | | | 140 | | | | | | |

| Ala | Phe | Ser | Glu | Gly | Ser | Val | Ile | Ala | Tyr | Tyr | Trp | Ser | Glu | Phe | Ser |
| 145 | | | | 150 | | | | 155 | | | | | 160 | | |

| Ile | Pro | Gln | His | Leu | Val | Glu | Glu | Ala | Glu | Arg | Val | Met | Ala | Glu | Glu |
| | | | 165 | | | | 170 | | | | 175 | | | | |

| Arg | Val | Val | Met | Leu | Pro | Pro | Arg | Ala | Arg | Ser | Leu | Lys | Ser | Phe | Val |
| | | | 180 | | | | 185 | | | | 190 | | | | |

| Val | Thr | Ser | Val | Val | Ala | Phe | Pro | Thr | Asp | Ser | Lys | Thr | Val | Gln | Arg |
| | | 195 | | | | 200 | | | | 205 | | | | | |

| Thr | Gln | Asp | Asn | Ser | Cys | Ser | Phe | Gly | Leu | His | Ala | Arg | Gly | Val | Glu |
| | 210 | | | | 215 | | | | 220 | | | | | | |

| Leu | Met | Arg | Phe | Thr | Thr | Pro | Gly | Phe | Pro | Asp | Ser | Pro | Tyr | Pro | Ala |
| 225 | | | | 230 | | | | 235 | | | | | 240 | | |

| His | Ala | Arg | Cys | Gln | Trp | Ala | Leu | Arg | Gly | Asp | Ala | Asp | Ser | Val | Leu |
| | | | 245 | | | | 250 | | | | 255 | | | | |

30428741v1

```
Ser Leu Thr Phe Arg Ser Phe Asp Leu Ala Ser Cys Asp Glu Arg Gly
        260             265             270

Ser Asp Leu Val Thr Val Tyr Asn Thr Leu Ser Pro Met Glu Pro His
        275             280             285

Ala Leu Val Gln Leu Cys Gly Thr Tyr Pro Pro Ser Tyr Asn Leu Thr
290             295             300

Phe His Ser Ser Gln Asn Val Leu Leu Ile Thr Leu Ile Thr Asn Thr
305             310             315             320

Glu Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe Gln Leu Pro Arg
            325             330             335

Met Ser Ser Cys Gly Gly Arg Leu Arg Lys Ala Gln Gly Thr Phe Asn
        340             345             350

Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile Asp Cys Thr Trp
        355             360             365

Asn Ile Glu Val Pro Asn Asn Gln His Val Lys Val Arg Phe Lys Phe
    370             375             380

Phe Tyr Leu Leu Glu Pro Gly Val Pro Ala Gly Thr Cys Pro Lys Asp
385             390             395             400

Tyr Val Glu Ile Asn Gly Glu Lys Tyr Cys Gly Glu Arg Ser Gln Phe
            405             410             415

Val Val Thr Ser Asn Ser Asn Lys Ile Thr Val Arg Phe His Ser Asp
        420             425             430

Gln Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr Leu Ser Tyr Asp
        435             440             445

Ser Ser Asp Pro Cys Pro Gly Gln Phe Thr Cys Arg Thr Gly Arg Cys
    450             455             460

Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp Cys Thr Asp His
465             470             475             480

Ser Asp Glu Leu Asn Cys Ser Cys Asp Ala Gly His Gln Phe Thr Cys
            485             490             495

Lys Asn Lys Phe Cys Lys Pro Leu Phe Trp Val Cys Asp Ser Val Asn
        500             505             510

Asp Cys Gly Asp Asn Ser Asp Glu Gln Gly Cys Ser Cys Pro Ala Gln
        515             520             525

Thr Phe Arg Cys Ser Asn Gly Lys Cys Leu Ser Lys Ser Gln Gln Cys
        530             535             540

Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu Ala Ser Cys Pro
545             550             555             560

Lys Val Asn Val Val Thr Cys Thr Lys His Thr Tyr Arg Cys Leu Asn
            565             570             575
```

```
Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp Gly Lys Glu Asp
        580             585             590

Cys Ser Asp Gly Ser Asp Glu Lys Asp Cys Asp Cys Gly Leu Arg Ser
        595             600             605

Phe Thr Arg Gln Ala Arg Val Val Gly Gly Thr Asp Ala Asp Glu Gly
    610             615             620

Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly Gln Gly His Ile
625             630             635             640

Cys Gly Ala Ser Leu Ile Ser Pro Asn Trp Leu Val Ser Ala Ala His
            645             650             655

Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp
            660             665             670

Thr Ala Phe Leu Gly Leu His Asp Gln Ser Gln Arg Ser Ala Pro Gly
        675             680             685

Val Gln Glu Arg Arg Leu Lys Arg Ile Ile Ser His Pro Phe Phe Asn
    690             695             700

Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro
705             710             715             720

Ala Glu Tyr Ser Ser Met Val Arg Pro Ile Cys Leu Pro Asp Ala Ser
            725             730             735

His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His
        740             745             750

Thr Gln Tyr Gly Gly Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile
        755             760             765

Arg Val Ile Asn Gln Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile
    770             775             780

Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser
785             790             795             800

Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly
            805             810             815

Arg Ile Phe Gly Ala Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gly
            820             825             830

Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp
        835             840             845

Ile Lys Glu Asn Thr Gly Val
    850             855


<210> 28
<211> 20
<212> DNA
<213> Homo sapiens

<400> 28
ggcccgcgct ctgaaggtga                                            20
```

```
<210> 29
<211> 20
<212> DNA
<213> Homo sapiens

<400> 29
ttggcaagca ggaagcaggg                                              20


<210> 30
<211> 22
<212> DNA
<213> Homo sapiens

<400> 30
cctcctcttg gtcttgctgg gg                                           22


<210> 31
<211> 20
<212> DNA
<213> Homo sapiens

<400> 31
agacccgtct gttttccagg                                              20


<210> 32
<211> 11
<212> PRT
<213> Homo sapiens

<400> 32
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu
  1               5                  10


<210> 33
<211> 9
<212> PRT
<213> Homo sapiens

<400> 33
Asp Tyr Val Glu Ile Asn Gly Glu Lys
  1               5


<210> 34
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MOD_RES
<222> (1)
<223> Arg or Lys

<400> 34
Xaa Val Ile Gly Gly
  1               5
```

30428741v1

<210> 35
<211> 5
<212> PRT
<213> Homo sapiens

<400> 35
Arg Val Val Gly Gly
 1   5

<210> 36
<211> 5
<212> PRT
<213> Homo sapiens

<400> 36
Arg Ile Val Gly Gly
 1   5

<210> 37
<211> 13
<212> PRT
<213> Homo sapiens

<400> 37
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro
 1   5   10

<210> 38
<211> 20
<212> PRT
<213> Homo sapiens

<400> 38
Ser Phe Val Val Thr Ser Val Val Ala Phe Pro Thr Asp Ser Lys Thr
 1   5   10   15

Val Gln Arg Thr
            20

<210> 39
<211> 20
<212> PRT
<213> Homo sapiens

<400> 39
Thr Val Gln Arg Thr Gln Asp Asn Ser Cys Ser Phe Gly Leu His Ala
 1   5   10   15

Arg Gly Val Glu
            20